

Senior Air Force Pilot-Physician Visits Navy's San Antonio Lab

By Joe N. Wiggins, NAMRU-San Antonio Public Affairs

"What you are doing here is not only a great service to our military; it is a great service to our nation."

That was the impression left on Maj. Gen. (Dr.) Byron C. Hepburn, the commander of the Air Force's 59th Medical Wing, after recently receiving a briefing and tour of the Tri-Service Research Laboratory (TSRL). Hosted by the commanding officers of Naval Medical Research Unit-San Antonio ([NAMRU-San Antonio](#)) and Detachment 5, Air Force Research Laboratory, the visit gave the general a clearer view of the capabilities of the facility and its staff.

"We wanted Gen. Hepburn and his team to clearly see we have a much wider range of options to conduct biomedical research to support warriors on the sea and on land than

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Maj. Gen. (Dr.) Byron C. Hepburn (left), commander of the Air Force's 59th Medical Wing, is briefed on the test of a new surgical device by Dr. James D. Ross, senior research physiologist and the deputy head of the Combat Casualty Care Research Department at the Naval Medical Research Unit-San Antonio. Photos by Joe N. Wiggins.

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Commanding Officer's Message

I had the opportunity, along with leadership from each of the labs throughout the Enterprise, to attend the Surgeon General's Leadership Forum and the Military Health System Conference in Washington, D.C. This was one of our first opportunities to meet together and hear Vice Adm. Matthew Nathan's vision for Navy Medicine and Navy Medical Research. I was left with several impressions. First, research is appreciated and supported. The SG mentioned several times that research is a critical part of the Navy healthcare system. During Vice Adm. Nathan's speech at the MHS Conference, I was pleased when he flashed up pictures of the Giza Pyramids, Machu Pichu, and scenes from Southeast Asia and mentioned the great work done in global health by our OCONUS labs. In addition, Rear Adm. Bruce Doll, in his brief on Navy Research, specifically noted that medical or logistical improvements related to recent or ongoing research efforts were mentioned in nearly every brief during the forum, highlighting the cross-cutting importance of active research programs. There was even a separate research tract at the MHS Conference, coordinated by Capt. Chris Daniel, presenting the latest developments in operational and combat casualty research, including work in traumatic brain injury, post-traumatic stress disorder, advances in prostheses, and regenerative medicine.

My second impression from the week is we are in a period of transition. There was a lot of discussion about diminishing budgets across the whole Navy and the potential impact for Navy Medicine. Although there was no specific discussion about research budgets, Vice Adm. Nathan's budget planning advice for all of Navy Medicine was to "think smaller, leaner, forward, and agile."

Finally, Vice Adm. Nathan emphasized we must maintain our strong support of the Marine Corps and noted that the new Defense Strategy shifts a lot of focus to the Pacific and highlights maritime capabilities, including an emphasis on the submarine force. He encouraged us to anticipate the next set of questions or problems and start working on those solutions. I feel confident that we have the right people and capabilities to be doing just that.



Commanding Officer sends,
Richard L. Haberberger, Jr.
CAPT, MSC, USN

Military Veterinarians, Medics Visit Anti-venom Research Facility

By Specialist Jennifer Grier, High Speed Vessel-Southern Partnership Station 2012 Public Affairs

Veterinarians attached to High Speed Vessel (HSV 2) Swift visited a snake and spider anti-venom clinic in Chorrillos, Peru as part of HSV-Southern Partnership Station 2012 (HSV-SPS 12), January 25.

The seven-person HSV-SPS 12 medical and veterinary team visited the National Center of Biology anti-venom clinic with an officer of the Peruvian Naval Hospital and U.S. Naval Medical Research Unit No. 6 ([NAMRU-6](#)).

The group discussed species of venomous snakes and spiders, the differences among venoms, and the potential signs and symptoms of patients in the hospital reported to have been victims of the species living in Peru.

"It's important to educate U.S. service members of all types about these creatures," said Lt. Cmdr. Luis Loayza, a doctor and liaison of the Peruvian Naval Hospital and NAMRU-6. "I've learned from working with the U.S. Navy that service members travel a lot, and you never know when these sorts of exchanges between countries about anti-venom will come in handy."

The tour of the facility began with a slide show describing the different types of venomous snakes and spiders within Peru and continued with a subject matter expert exchange between the medical team and the researchers.

"Snakes and spiders are more afraid of you than you are of them," said Monica Chacon Paz, research specialist and tour guide. "From an ecological point of view the world needs these creatures, and we need them to continue valuable research."

The anti-venom facility houses three different types of live, venomous snakes in Peru and a small variety of venomous spiders. The center hopes to keep researching the species and make tours of the center available to increase education and awareness worldwide.

"This was an important visit," said Tech Sgt. Andrew Clarke, a medical technician attached to the veterinary and medical team on Swift. "It's important to see how other research facilities are run in countries that have different species that we are not accustomed to seeing."

NAMRU-6's mission is to conduct research and surveillance to diminish the threat of infectious diseases to the warfighter by developing superior prevention or therapeutic strategies. They serve the health interests of the people

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Navy Surgeon General Highlights Warfighter Support Role

From Navy Bureau of Medicine and Surgery Public Affairs

The top medical officer for the U.S. Navy and Marine Corps highlighted the key role his medical forces play in support of the operating forces to a capacity crowd at the 2012 Military Health System Conference held at the Gaylord National Resort and Convention Center February 1.

Navy Surgeon General, Vice Adm. Matthew Nathan, told an audience of more than 1,000 U.S. military and federal health care professionals that the main mission of Navy Medicine is to keep the nation's naval forces medically ready to operate around the world in support of U.S. national objectives.

"Our job in Navy Medicine is to support the forward deployed force and provide readiness," said Nathan. "When the world dials 911, it's not to make an appointment."

Nathan highlighted the Navy's global mission of being forward de-

ployed to provide a power projection and deterrence role while also being ready to respond to humanitarian assistance and disaster response requirements.

"We are a global force for good," said Nathan. "We build our Navy for war. But we operate our Navy for peace."

The annual conference allows all the stakeholders in the U.S. military health system, including representatives from all branches of service, TRICARE Management Activity, and the U.S. Department of Veterans Affairs, to come together and share lessons learned and best practices throughout the military medicine field.

During his presentation, Nathan discussed the Navy medical role in battlefield trauma care and the successes the joint medical forces have achieved in caring for those wounded during the past decade of combat operations.

"Our main mission is support to the warfighter and we're in the fight," said

Nathan. "More than 50 percent of Navy [personnel] wounded over the past decade of war have been Navy Medicine. Our losses are 28 percent."

According to Nathan, the continuum of care for combat wounded is unprecedented with a survivability rate of approximately 97 percent. He told the crowd that now the average time from when a patient receives near-mortal wounds on the battlefield until they end up at an intensive care unit at Walter Reed Bethesda, Brooke Army Medical Center, or Naval Medical Center San Diego is three to five days. He noted this is due to the cooperation of the Navy, Air Force and Army medical teams along the way.

Nathan reminded the crowd that wounded warrior care is a long-term mission that will require continued collaboration among the services and other federal healthcare agencies.

"This is going to be a military, Veteran's Affairs and private sector call to duty of America to deal with the numbers of service men and women who are dealing with traumatic brain injury and post-traumatic stress," said Nathan.

Nathan concluded his remarks by highlighting the unprecedented achievements the joint medical team has accomplished together and affirmed his commitment to working with his service counterparts to look for greater efficiencies and better ways to conduct the business of healthcare for the U.S. military, families and veterans.

"I've seen the synergy of what happens when the Army, Navy, and Air Force come together during medical operations," said Nathan. "We celebrate our victories together and mourn our losses together. We are family."

As the Navy Surgeon General and Chief, Bureau of Medicine and Surgery, Nathan leads 63,000 Navy Medicine personnel that provide healthcare support to the U.S. Navy, Marine Corps, their families and veterans in high operational tempo environments, at expeditionary medical facilities, medical treatment facilities, hospitals, clinics, hospital ships and research units around the world.



Vice Adm. Matthew Nathan, Navy surgeon general, speaks during the second day of plenary sessions during the 2012 Military Health System (MHS) Conference held at the Gaylord National Hotel and Convention Center in National Harbor, Md., February 1. The MHS aims to ensure the medical readiness of U.S. service members and to provide a ready medical force. Photo by Johnny Bivera.

NMRC Researchers Move Forward on Travelers' Diarrhea Vaccine

By Terri Moon Cronk, American Forces Press Service

Navy medical researchers have expanded the knowledge of the bacterium that causes "travelers' diarrhea" and are in the early stages of clinical trials of a vaccine they developed for it.

Recognizing the impact of travelers' diarrhea on military readiness, particularly when it affects deployed forces, the Department of Defense is the primary sponsor of the research, with assistance from other groups, said Navy (Dr.) Capt. Stephen Savarino and clinical trial principal investigator Navy Cmdr. Mark Riddle of the Naval Medical Research Center (NMRC) at the Forest Glen Annex in Silver Spring, Md.

The bacterium was discovered as the cause of travelers' diarrhea in the late 1960s by other researchers, and NMRC researchers developed the first vaccine in 2004. After toxicology studies in 2011, they started the first

phase of clinical trials in August, Riddle said. Forty volunteers ages 18 to 45 are participating.

With the trials just beginning, Savarino said, more work remains to be done before the vaccine will be available. The Food and Drug Administration requires all new drugs to be proven safe and effective before they are administered to people, he explained, and though clinical data from this trial area is expected this year, it could be seven or eight years before the vaccine is licensed.

"We think there's a lot of promise in this vaccine," he said, "but we need to have the data to support it moving forward."

The *E. coli* bacterium that causes travelers' diarrhea often develops during visits to parts of the world where sanitation is not as sophisticated as in the U.S. public health system, the researchers said. Savarino added that even those who try to practice the best hygiene possible in these countries still are

susceptible.

Largely picked up by consuming contaminated water or food, the condition is so common for Americans that many service members do not seek treatment for it, the researchers said, though it can have a severe impact on their mission.

"When we send forces to places like Iraq or Afghanistan...the risk of disease can run 30 percent to 50 percent per month," Savarino said, and the impact is particularly severe during the first 6 to 12 months of a deployment. "That's when the rates of disease are extremely high," he said.

Even a sole service member with diarrhea can hurt military operations, Riddle said.

"You're deployed to places where the temperature can be 140 degrees, and you have to use the bathroom six times a day," he said. "You've got cramping, abdominal pain and nausea, and you're operating a tank, or on patrol, worried about an improvised explosive device. How well are you able to do that job, protect yourself and your fellow troops, when you're preoccupied with an illness like that?"

Riddle acknowledged that no one has died in Iraq or Afghanistan because of diarrhea — at least directly.

As researchers work toward a licensed vaccine, they recommended some precautions U.S. service members and the traveling public can take to avoid travelers' diarrhea.

In addition to maintaining good hygiene, Savarino said, people "must stay hydrated, eat well and remember that electrolytes are important."

Drinking water is vital, he emphasized. "Dehydration can be a problem in the military, because troops are running hard all the time," he said. Other factors that also play a part include prior exposure, genetics, what one eats, and the amount of healthy bacteria in the body.



Cmdr. Mark Riddle (left), clinical trial principal investigator, and Capt. Stephen Savarino, physician-scientist who has spearheaded the development of the ETEC adhesin vaccine, shown in the hallway outside the Clinical Trials Center at the Walter Reed Army Institute of Research.

NAMRU-3 Collaborates to Eradicate Cutaneous Leishmaniasis

By Darnell Gardner, NAMRU-3
Public Affairs

The U.S. Naval Medical Research Unit No. 3 (NAMRU-3) in Cairo, Egypt, began scientific collaboration in September 2011 with the Moroccan Ministry of Health to work on the eradication of cutaneous leishmaniasis (CL), a disfiguring skin condition caused by infection with the organism *Leishmania major* (*L. major*). The offending microbe, a resident of the rodent-sand fly ecosystem, is transmitted to humans by the bite of infected sand flies, which become infected when they feed on the feces or blood of an infected rodent. CL is a serious health problem in Morocco, with nearly 9,000 cases reported in 2010.

Over 2,500 U.S. personnel serving in the Middle East and Asia have contracted leishmaniasis at an estimated cost of over \$20 million in treatment and lost personnel-hours. NAMRU-3's Vector Biology Research Program's active engagement in disease surveillance and novel research activities have served as an



Dr. Hanafi, accompanied by Moroccan researchers, surveys the habitat of *Psammomys obesus* (suspected reservoir host of *L. major* in Morocco) in Tejer sector, Bouarfa Province.

integral part of the Navy's medical research mission to combat leishmaniasis.

With funding support from the

Deployed War-Fighter Protection (DWFP) program, Dr. Hanafi Hanafi, NAMRU-3 vector biologist, and Dr. Thomas Mascari, a parasitologist from the Louisiana State University Agricultural Center (LSU AgCenter), traveled to Morocco to collaborate with Moroccan researchers on selecting suitable sites for sand fly and rodent surveillance in several CL endemic areas. "Dr. Cherif

Mohamed, Director, Health Province Bouarafa, pinpointed the Jerada, Berkane, and Figuig provinces of eastern Morocco, to initiate surveillance activities," explained Hanafi. "These areas are historically endemic for CL due to the presence of numerous *Meriones shawi* (*M.shawi*) and *Psammomys obesus* (*P. obesus*) rodent colonies. These rodents serve as the primary source of fresh blood meals for sand flies and are considered reservoir hosts for CL."

This effort entailed conducting a study on sand fly control using specially treated rodent foods throughout suspected feeding areas of *M.shawi* and *P.obesus*. The first type of food was treated with fluorescent dye that left a trail of identifiable excrement when ingested. This allowed researchers to pinpoint exact feeding areas of the *M.shawi*. The second type of food was laced with rodent-friendly ivermectin insecticide. Once ingested, ivermectin enters the rodents' bloodstream, resulting in a

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Rodent baits containing the insecticide ivermectin were palatable to *Meriones shawi*, the reservoir host for *L. major* in Morocco.

Guam Hospital Corpsmen Hold Bone Marrow Registry Drive

By Mass Communication Specialist
2nd Class Gabrielle Blake, USS
Frank Cable Public Affairs

Hospital corpsmen assigned to the submarine tender USS Frank Cable (AS 40) and U.S. Naval Hospital Guam held a bone marrow registry drive at Polaris Point January 3-4. The purpose of the drive was to disseminate information about the new process of collecting bone marrow.

"We are trying to get rid of that stigma of pain," said Hospital Corpsman 1st Class Rebecca Jones, assigned to U.S. Naval Hospital Guam. "Most people know about the old, painful method with the giant needle. This new process is not as bad. It is just like donating a unit of blood."

The drive was held across the Department of Defense (DoD), allowing Sailors and anyone who is DoD sponsored and between the age

of 18 and 60 to be placed into the registry. Donors filled out personal information and gave cheek swab samples.

Jones said everyone who is able to enter the registry should.

"You could be in the registry and never get called up or you can get called up and once they do a little bit more testing, you may not be a match," said Jones.

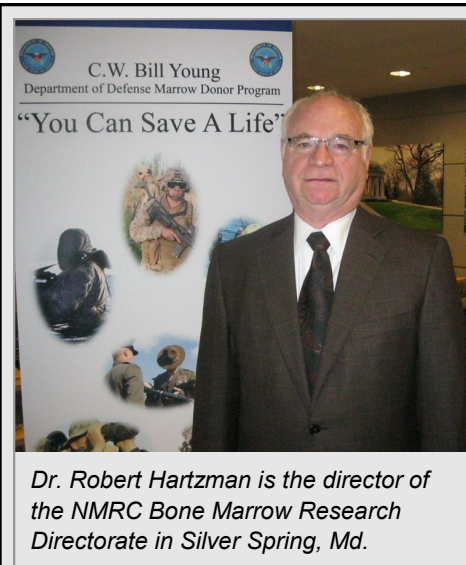
"Finding a match is hard," said Hospital Corpsman 1st Class Edgardo Victorino, assigned to Frank Cable, "so the more people who register, the more selections there are for them to pick out someone compatible."

During the drive, the corpsmen explained the benefits of being a bone marrow donor.

"You never know who will need it someday," said Victorino. "It could be your wife or child. It's an opportunity to save someone's life."

"The people you are donating to are dying, so you are giving somebody a second chance at life that they would never have," said Jones. "If you really think about it, it is two weeks of a little bit of discomfort for you and a whole lifetime for that person you are donating to."

USS Frank Cable is being temporarily relieved by USS Emory S. Land (AS 39) as the primary afloat maintenance activity in the U.S. 7th Fleet area of responsibility.



Following a DoD donor drive like this one, the consent forms and oral swabs are sent to the C.W. Bill Young DoD Marrow Donor Program Donor Center and Laboratory, which is part of the Naval Medical Research Center ([NMRC](#)) in Silver Spring, Md. Each donor is given an identification number that is entered in the national registry. The name and other identifying information is retained by the DoD program and great care is taken to ensure confidentiality. The next step at the lab is genetic testing using the cells from the oral swabs to match potential donors with patients. If the donor is available and agrees to proceed and

their command approves, additional genetic matching is performed to ensure a match. Additional medical evaluations are performed to ensure the donor's good health and a transplant date is selected. The donor's cells are transported to the patient's hospital for transplantation. The patient and donor can choose to meet each other one year after the transplant.

Military Veterinarians, Medics Visit Anti-venom Research Facility

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of Peru and South America. NAMRU-6 collaborates with militaries and ministries of health from ten Latin American countries, numerous non-governmental organizations, academic institutions and public health organizations.

The team of veterinarians is scheduled to conduct more subject matter expert exchanges and participate in more animal research within different facilities as a part of HSV-SPS 12.

Service members from each of the

armed services are working with host nation partners, conducting exchanges of techniques and information in Navy Criminal Investigative Service, medical, small-unit leadership and engineering practices.

Southern Partnership Station is an annual deployment of U.S. ships to the U.S. Southern Command area of responsibility in the Caribbean, Central and South America. The mission's primary goal is information sharing with partner nation service members and civilians in the region.

U.S. Naval Forces Southern Command and U.S. 4th Fleet support U.S. Southern Command joint and combined full-spectrum military operations by providing principally sea-based forward presence to ensure freedom of maneuver in the maritime domain, to foster and sustain cooperative relationships with international partners and to fully exploit the sea as maneuver space in order to enhance regional security and promote peace, stability and prosperity in the Caribbean, Central and South American regions.

NAMRU-3 Hosts International Workshop for Healthcare Pros

By Darnell Gardner, NAMRU-3 Public Affairs



Mr. Sameh Safwat, NAMRU-3 scientist and point of contact for the visit, answering questions pertaining to methods of hazardous waste disposal.

The U.S. Naval Medical Research Unit No. 3 ([NAMRU-3](#)) has served as a cornerstone of health diplomacy in Egypt since 1946. With that comes the opportunity to work closely with the Ministry of Health, local research organizations and universities. Recently, NAMRU-3's Viral and Zoonotic Diseases Research Program had the opportunity to host the laboratory component of a workshop entitled *Total Quality Management for Healthcare Facilities for Africa*, sponsored by the Japan International Cooperation Agency (JICA) for international healthcare professionals and held at Fayoum

University, Fayoum, Egypt. A unique feature of this event was that the students were not from Egypt, but rather from various sub-Saharan African countries.

Students were selected by their respective Ministries of Health to attend the three-week short course on total quality management. During the NAMRU-3 portion, students received instruction on general laboratory management focused on quality standards and safety measures in accordance with Department of Defense, Department of Navy and NAMRU-3 standard operating proce-

dures. The knowledge acquired from this course will allow students to serve as points of reference for issues involving improvements of health provisions for services in their country.

Representing Malawi, Dr. David Zolawari commented, "The program has been great! We have learned a great deal of theoretical aspects of health care. We are here to study lab management from the aspect of learning safety measures, how to avoid laboratory based infections, as well as to help control infections in the core public. I have learned many things to bring back to my country such as waste disposal as well as infection control."

"In our country, we don't have standards to guide our actions for betterment of our department and Ministry of Health. We came to NAMRU-3 to gain practical aspect on how we can properly manage our labs. While here, we have learned how to communicate more effectively, surveillance statistics, and laboratory management. We hope to learn enough to take back to our country for immediate implementation," said Ugandan hospital ward manager, Ms. Jackie Kabwa.

"Thanks to our growing relationship with Fayoum University, we were able to provide a practical learning environment focused on how to construct and implement a successful laboratory management program," said NAMRU-3 virologist Sameh Mansour.

NAMRU-3 Collaborates to Eradicate Cutaneous Leishmaniasis

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deadly blood meal for the female sand flies who feed on the rodents while leaving the rodents themselves unharmed. In addition, the excrement left by the ivermectin-fed rodents serves as a poisoning agent for the sand fly larvae who use rodent excrement as a food source.

Observation cameras, specially treated rodent food, and specialized

light traps were set up to monitor levels of activity among sand flies and rodents. Approximately 5,000 sand flies and feces samples were collected, proving the treated bait was palatable to *M.shawi*. Samples were shipped to the LSU AgCenter for final analysis to determine the impact of the rodent bait treatments on the sand fly populations.

"This is an important first step for

field trials for sand fly control, using feed-through and systemic insecticides in areas where CL is problematic. The success of this project has resulted in the designation of additional sites for sand fly and leishmaniasis studies in Morocco. Positive discussions with Moroccan collaborators have also ensured the continuation of this project into Spring 2012," Dr. Hanafi said.

Biological Defense Directorate Partners with University of Nebraska

Provided by BDRD Public Affairs

The International Field Microbiology Program of the Naval Medical Research Center (NMRC) Biological Defense Research Directorate (BDRD) at Ft. Detrick in Frederick, Md., has partnered with Dr. Steven Hinrichs at the University of Nebraska Medical Center (UNMC) to develop new ways to detect *Francisella tularensis* bacteria in environmental samples using real-time polymerase chain reaction (PCR) assays.

"Tularemia, caused by the Gram-negative pleomorphic rod *F. tularensis*, is highly infectious," said NMRC Senior Scientist Dr. Steve Francesconi. "Symptoms can be debilitating and even fatal, making *F. tularensis* a dangerous pathogen. It is transmitted by the bite of *Dermacentor* spp. and *Amblyomma* spp. ticks, deer flies, and by exposure to tissue from infected animals. According to CDC, approximately 100 cases per year are reported in humans, but the infection rate among ticks is uncertain."

Working with UNMC, BDRD researchers are developing new PCR assays to detect *F. tularensis*. Part of that work involves collecting new strains of the organism from rabbits and hares, which are the reservoir host for tularemia, along with ticks that transmit the disease.

"To date, we have collected over 500 samples from Montana, Wyoming, South Dakota, Nebraska and Virginia," said Francesconi. "During our testing, we discovered that some commonly used PCR tests produce false positive results, meaning the test showed a positive result when the sample



Elizabeth Wallace, BDRD research associate, is working out of a mobile lab processing samples collected from ticks and rabbits in Scottsbluff, Nebraska, where the BDRD team spent five days.

was negative for *F. tularensis*. This happened only when we tested tick samples, but never with samples from rabbits."

"People often ask us what collecting rabbits and dragging for ticks has to do with Biodefense Research. Quite a lot, it turns out," said Elizabeth Wallace, BDRD research associate. "To better understand the host-bacterium relationship, we have concentrated our efforts on studying the types of bacteria inside the ticks."

F. tularensis subspecies *tularensis*, also known as Type A, is highly virulent and found only in North America. The less-virulent Type B is found throughout the Northern Hemisphere. Type A is subdivided into clades A1 and A2. A1 is typically found east of the Rocky Mountains and on the West Coast. In contrast, A2 is found in the Intermountain region of the Rockies. A2 strains are associated with reduced mortality.

Ticks are host to a variety of bacteria, called endosymbionts, most of which are harmless to people. The endosymbionts gain food and shelter from their tick host. In return, the tick may receive some added benefits. It appears that at least one of these endosymbionts is genetically related to *F. tularensis*. Its DNA sequence is close enough that it produces a positive result for some available PCR tests.

"Our main goal and key issue is finding sequences that are present in *F. tularensis* and absent in all other endosymbiont species," said Wallace. "Current laboratory work is designed to characterize the endosymbiont population in these ticks and to sequence their genomes. Once we know their genomes, we will understand better the genetic variability in these bacteria and design more specific PCR assays."

NMRC Command Chief Reenlists

Chief Hospital Corpsman Jerrold E. Diederich reenlisted into the Navy January 6 after 20 years of service. In 2011, he accepted orders to NMRC as the Command Chief and Enterprise Senior Enlisted Leader. He oversees enlisted matters at NMRC Headquarters and its eight subordinate commands worldwide.

Diederich's personal decorations include the Joint Service Commendation Medal, Navy and Marine Corps Commendation Medal (four awards), Navy and Marine Corps Achievement Medal (three awards), Good Conduct Medal (six awards), as well as numerous unit awards.



NMRC Researcher Receives Award from the Journal *Vaccine*

Dr. Sofia Casares, a senior investigator in the Naval Medical Research Center (NMRC) Malaria Department, received an award from the journal *Vaccine* for her publication "The RTS,S malaria vaccine." The journal awarded Casares a certificate citing the publication as a "Top Downloaded Article 2010."

"This is wonderful recognition for a wonderful review," said Capt. Thomas Richie of the U.S. Military Malaria Vaccine Program and a co-author of the publication along with Dr. Teodor Brumeanu of the Department of Medicine, Uniformed Services University of the Health Sciences. "Dr. Casares knit together, for the first time, immunological findings from all the RTS,S malaria vaccine trials, allowing comparisons among the trials. The resulting figures and graphs have been widely referenced as this important candidate vaccine approaches licensure for use. RTS,S, a partially effective vaccine, was developed by the Walter Reed Army Institute of Research and GlaxoSmithKline and is currently being tested in Africa."

"Although we have effective drugs for preventing malaria," said Capt Eileen Villasante, head of the NMRC Malaria Department, "it is difficult to take the drugs regularly in the field due to side effects. We are very proud of Dr. Casares. This level of scholarship is what we are about as vaccine developers." Villasante emphasized that successfully developing a vaccine for the warfighter requires exactly the synthetic thinking so aptly



Capt. Thomas Richie, research coordinator for the U.S. Military Malaria Vaccine Program, poses with Dr. Sofia Casares, a senior investigator in the Naval Medical Research Center (NMRC) Malaria Department, as she holds her certificate for "Top Downloaded Article 2010" from the journal Vaccine.

demonstrated in Dr. Casares' comprehensive review article.

Casares received a Ph.D. in immunology from Universidad Autonoma de Madrid. She worked as an assistant professor at Mount Sinai School of Medicine, New York, until she came to NMRC. Casares has conducted ground-breaking research in the development of humanized mouse models for the Malaria Program and is currently testing novel vaccine designs in rodent models.

The goal of the U.S. Military Malaria Vaccine Program is to develop a highly efficacious vaccine as a definitive solution to the malaria problem.

The malaria parasite destroys red blood cells and, in severe cases, damages internal organs, leading to coma and death. U.S. military personnel can be stricken with malaria when deployed to tropical regions including Iraq and Afghanistan, compromising their mission and placing U.S. lives in jeopardy.



Navy Malaria Program

The primary objective of the Navy Malaria Program is to develop a vaccine that kills the parasite during its first few days of development in the human body. Such a vaccine would benefit deployed military personnel as well as travelers and other non-immune populations. The Malaria Program's activities range from discovery research, in which researchers try to understand the nature of protective immunity, to clinical trials of candidate vaccines carried out in our clinical trials center. Successful vaccines can be transitioned to testing in field settings, with collaborating institutions in Africa, Asia, and South America. The Malaria Program also benefits from the Navy's overseas laboratories, which allow study of the epidemiology of parasite in its native habitat, and also help to coordinate field testing of novel vaccines and drugs.

HM1 Brian Knetsch Teaches at Medical Education Training Campus

A Hospital Corpsman (HM) is an enlisted medical specialist for the United States Navy who serves with Navy and Marine Corps units to provide medical care. Each year, the Navy enrolls students to the Hospital Corpsman "A" School, located at the Medical Education Training Campus (METC) in Fort Sam Houston, Texas. Over 12 weeks, students are taught the principles of basic life support, emergency medical treatment, and nursing.

HM1 Brian Knetsch, a lab technician with the Naval Medical Research Center's (NMRC) Biological Defense Research Directorate (BDRD) at Fort Detrick in Frederick, Md., was selected to be an instructor at the METC to teach new Hospital Corpsmen. Last June, he joined a team of 34 temporary instructors assigned the task of training future Navy Medicine leaders. During his six months, he had several roles where his responsibility was to train the students on basic life support (which is CPR) and phlebotomy as well as to organize the entire medical supply system and labs there.

He provided a setting where the new hospital corpsmen would have hands-on training. Under HM1 Knetsch's leadership as a lab instructor, they were able to simulate real-life scenarios such as how to bandage, apply a splint, and insert nasogastric tubes.

Being able to share his experience with the students is what Knetsch is proud of. Having done almost everything

that can be done as a corpsman, Knetsch wanted to pass on his stories and knowledge to the students. He's been in their shoes before and his goal was to make sure they were on the right path to becoming better corpsmen.

In over 16 years in the Navy, this was Knetsch's first opportunity as an instructor. His career has taken him many places to assist those in need. He traveled to Haiti in 1998 on a joint peacekeeping mission to administer wound care, dental care, perform laboratory duties and distribute medications. A defining moment for him was back in 2003 during a tour in Iraq. He was called into a foxhole to administer care to a wounded Marine. With quick thinking and help from his partner, an Independent Duty Corpsman (IDC), Knetsch used his training to save a life.

"Most people don't think that they can do it until they are actually tasked with it," Knetsch said. "You don't really think

about it, but your training just kicks in.

"When out in your hometown, when you tell people you are a corpsman, they light up, especially the veterans who had corpsmen take care of them. There is a tradition in being a corpsman and people hold you in high regard because of what you do," Knetsch added. He is proud of being part of a community where there is a sense of pride and camaraderie. He was given the opportunity to share the pride he has in being a corpsman while teaching at METC. While this assignment was for six months, he hopes to have another opportunity to make an impact on future Navy Medicine leaders.



HM1 Brian Knetsch at NMRC in Silver Spring, Md.

Supply Corps Officer Dorothy Moore Promoted

Lt. j.g., USNR, Dorothy Moore was promoted January 11 at the Naval Medical Research Center (NMRC). As a Supply Corps Officer in the U.S. Navy Reserves, she is currently attached to the Operational Support Unit at Naval Air Facility Washington awaiting orders. At NMRC, Moore is currently employed as the Lead Safety Specialist. She has been employed at NMRC, previously known as the Naval Medical Research Institute (NMRI), for eighteen years.

Moore enlisted in the Navy Reserve at the rank of Petty Officer Second Class in 1986 and was promoted to the rank of Senior Chief Petty Officer before being commissioned. In 2006, she was commissioned Chief Warrant Officer 2. Her Navy active duty tours included: Training Officer, Defense Logistics Agency (DLA), Joint Reserve Force Headquarters, 2007; Assistant Officer-in-Charge, DLA Defense Reutilization Marketing Service, Iraq, 2007-2008; Training Officer, DLA Energy Headquarters, Fort Belvoir, Va., 2008-2009; Executive Officer, DLA Energy – Fuels Management Team, 2009-2011.

Her awards include the Defense Meritorious Service Medal, Joint Service Commendation Medal, Navy and Marine Corps Commendation Medal and Navy and Marine Corps Achievement Medal.



Senior Air Force Pilot-Physician Visits Navy's San Antonio Lab

(Continued from page 1)

ever before in our history," said Capt. Vincent DeInnocentiis, NAMRU-San Antonio commanding officer. "This includes the ability to fully challenge and use the staff of NAMRU-San Antonio as well as draw from other services such as the Army and Air Force to conduct our mission in a joint environment."

As the commander of the Air Force's largest medical wing and one of only 15 pilot-physicians in the Air Force, Hepburn is focused on any new capability that helps him execute his mission to provide clinical research and medical education to the 6,000 people he commands.

"It was clear to me the great job being performed by all of the staff at

the lab, and gives me a better vision of how this facility can assist the medical missions of all the services, as well as the American public," the general said after the tour.

Included in the more than 20 labs, work stations and other settings visited by the general were demonstrations of directed energy, combat casualty, biomedical and research and training capabilities in the TSRL.

"I was excited to see the general's interest in the potential for joint research and development efforts between the Air Force and the Navy in Combat Casualty and En Route Care," said Dr. James D. Ross, senior research physiologist and the deputy head of the Combat Casualty Care Research Department. "These types of relationships will strengthen the quality of our research product and extend the impact of our research to service men and women from all branches."

The laboratory's joint service and research capabilities were also reinforced by Col. Terry Stotler, commander of Detachment 5, Air Force Research Laboratory. His briefing of capabilities and missions showed the general the overlap and shared capabilities between the Air Force and the Navy staff members at the lab.

"We can do more now and do it better alongside Capt. DeInnocentiis's staff in this facility," Stotler said. "This clearly shows advanced and enhanced research opportunities for both services."



From left: Col. Terry Stotler, commander of Detachment 5, Air Force Research Laboratory, briefs Maj. Gen. (Dr.) Byron C. Hepburn, the commander of the Air Force's 59th Medical Wing, with Capt. Vincent DeInnocentiis, commanding officer of the Naval Medical Research Unit-San Antonio, Cmdr. Shannon P. Voss and Dr. Debra Niemeyer, chief scientist and Air Force Medical Service representative, on the Tri-Service Research Laboratory's 3-D modeling capabilities.

As the commander of the Air Force's largest medical wing and one of only 15 pilot-physicians in the Air Force, Hepburn is focused on any new capability that helps him execute his mission to provide clinical research and medical education to the 6,000 people he commands.

NAMRU-2 Helps Launch First CARAT Exercise with Bangladesh

From NAMRU-2 Pacific Public Affairs

The U.S. Naval Medical Research Unit No. 2 ([NAMRU-2](#)) Detachment Singapore, with support from Navy Environmental and Preventive Medicine Unit No. 5 (NEPMU-5) in San Diego, Calif., participated in Cooperation Afloat Readiness and Training (CARAT) Naval Exercises in Bangladesh, September 2011.

The first CARAT exercise to be held in Bangladesh combined training events ashore and at sea, with shore events bringing together personnel from the Bangladesh Navy; the U.S. Navy; U.S. Naval Reserves; Commander, Logistics Group Western Pacific-Singapore; and NAMRU-2 to share information from medical, dental

and subject matter expert exchange components. Bangladesh Navy personnel and visiting U.S. Navy personnel covered a broad range of subject matter expert exchange topics, including aviation medicine physiology, ocular emergencies/eye disease, preventive medicine – shipboard requirements, tuberculosis, conjunctivitis, malnutrition and acute febrile respiratory illnesses.

Karen Blundon, program coordinator, gave an introductory overview of NAMRU-2's regional activities on public health surveillance of acute febrile respiratory illnesses and causative agents. Signs and symptoms of viral infection, associated factors, and a description of viral testing methods were presented. Blundon also provided

study data comparing the seasonality of the viral infections in the Northern Hemisphere with those in more tropical climates, including Bangladesh.

The Bangladesh Navy participants expressed interest in additional information exchange events, especially recent research and development for wound care and ocean medicine. The Bangladesh Navy does not participate in an annual flu vaccination program, and there was interest in the use of annual influenza vaccinations for the U.S. military and the benefits for service members. The expressed interest in these additional topics will guide NAMRU-2's development of information exchange materials for further engagement with Bangladesh and preparation for future CARAT engagements.

Greetings from the NMRC Ombudsman!

I hope everyone is having a successful start to 2012. With the New Year fully under way, this is a great time to take a personal inventory and try to develop a rewarding work-family balance. Many of us are overwhelmed on a daily basis because we try to take on too much. Evaluate what is really important to you and find out what your family truly values. Cut back on activities that don't matter as much to you and focus on protecting your personal time. Protecting private time usually means greater productivity and satisfaction. So look to achieve that balance in 2012 that is sure to bring you peace, happiness and even some fun.

Tax Time: Yes, it's that time of year again. For many of us, it can be a very daunting task to file taxes when dealing with so many issues such as both federal and state taxes, making sure you get your maximum refund, or worrying about filing when your sailor is deployed.

Navy Volunteer Income Tax Assistance (VITA) centers around the world will be open for business soon. On-site services are available to assist service members and their families with free tax advice, tax preparation and return filing by IRS-trained volunteers. To find the nearest VITA center, visit Navy JAG Corps (http://www.jag.navy.mil/organization/code_16_tax_info.htm).

Understanding the Core Services for the Military and Family Support Center (MFSC): The MFSC comprises some core services that act as the foundation for all other services provided through the MFSC. Knowing and understanding the services and resources available to you is part of successfully enjoying life in the military. Some of the core services offered include:

- Information and Referral (I&R)
- Family OMBUDSMAN / KEY SPOUSE Program
- Family Employment Readiness Program (FERP)
- Relocation Assistance Program (RAP)
- Transition Assistance Program (TAP)
- Deployment Support and Disaster Preparedness.

On a personal note, this will be my last newsletter contribution as Ombudsman. It is time for my family to move from NMRC to our next duty station. I am very happy that I had an opportunity to serve as Ombudsman for NMRC, and I'm sad to have to say good-bye for now. It is nice to be in a community that is so much like a family. I wish all the Sailors and their families the best of luck in their lives and careers.

If you need more information on these or any other resources, please contact me at angela.prouty@med.navy.mil or 217-722-4981.

Angela Prouty
Ombudsman, NMRC



NAMRU-Dayton Vertical Linear Accelerator Video on YouTube

By Dr. Richard D. Arnold, NAMRU-Dayton Scientific Director

At Wright Patterson Air Force Base in Ohio, the Naval Medical Research Unit-Dayton's ([NAMRU-Dayton](#)) aeromedical directorate conducts aerospace-relevant basic and applied research in the biomedical and behavioral sciences. Principal areas of investigation include spatial disorientation, situational awareness, motion sickness, adaptation to unusual acceleration environments, effects of altitude, sustained operations and fatigue, personnel selection testing and visual and auditory sciences.

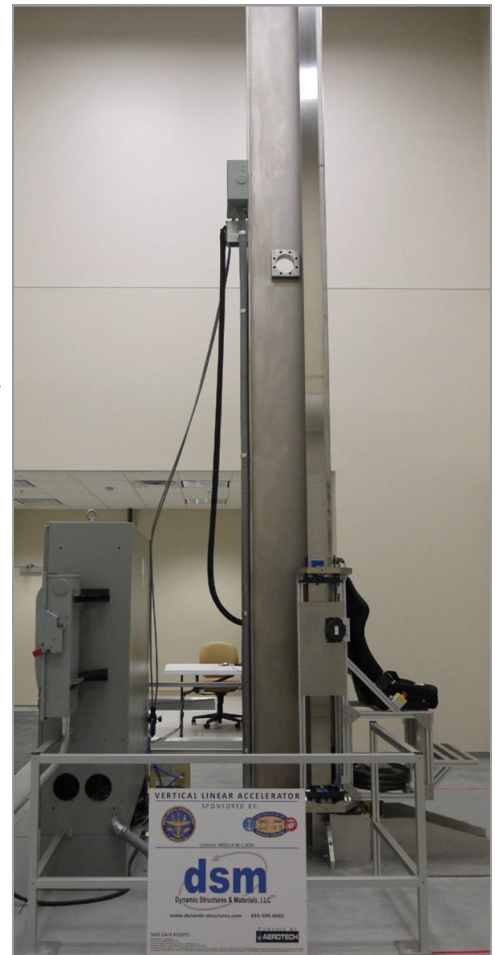
The lab boasts a unique collection of man-rated acceleration research devices used by NAMRU-Dayton researchers as well as by visiting scientists from around the world. One of the devices is the Vertical Linear Accelerator (VLA).

The VLA is designed to generate precisely controlled vertical accelerations and serves as a platform for human research on such problems as vibration, spatial disorientation and motion sickness. Numerous studies have linked whole-body vibration exposure, such as that experienced by helicopter occupants, to chronic neck and back pain, fatigue, discomfort and even decreased situational awareness in the cockpit. Competing visual and

vestibular sensory information on moving platforms can cause spatial disorientation or motion sickness. Mitigating vibration-related neck and back pain and understanding interactions between the visual and vestibular systems are critical for operational effectiveness.

The VLA possesses a stainless steel monolithic column that allows 12 feet of vertical travel distance. For vibration research, low-amplitude oscillations on the order of 0.1 G can be produced at frequencies between 4-25 Hertz, a physiologically relevant range and a range mirrored by the blade passing frequency of airframes currently in the Department of Defense inventory. For vestibular research on applications such as motion sickness, sinusoidal accelerations of up to +/- 1 G can be produced at frequencies between 0.1 – 2 Hertz. Air bearings between the column and carriage reduce velocity-dependent noise and vibrations, minimizing external cuing to the volunteer subject. A fully reconfigurable carriage provides great flexibility, allowing for the integration of up to 400 pounds of payload, which can include volunteer subjects, alternative seating design, visual displays or other equipment.

See the VLA in action at <http://navymedicine.navy.mil/sites/dodlive.mil/archives/1632>.



Vertical Linear Accelerator (VLA)

For more information on NAMRU-Dayton, visit our web site at <http://www.med.navy.mil/sites/nmrc/pages/namrud.htm>.

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